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NOTES AND NEWS.

THE eighth congress of Russian naturalists will be opened at St. Petersburg on Jan. 7, 1890, and will last a week.

— We regret to have to announce the death of the Rev. J. M. Berkeley, the eminent cryptogamic botanist.

— Mr. Henry Shaw, the founder of the celebrated botanical gardens in St. Louis, has just celebrated his eighty-ninth birthday.

— We learn from *Nature* that the professorship of civil engineering and mechanics in the University of Glasgow is likely to be vacant by the resignation of Professor James Thomson, on account of weak health.

— Actual elevations taken since the recent disaster at Johnstown, Penn., show that during the flood the water in the neighborhood of Conemaugh and the South Fork bridge reached an average height of forty feet above low-water mark. At the big viaduct on the up-stream side the water was seventy-nine feet deep.

— The Russians have recently improved on the sleeping-coaches of the railway and the perambulating schoolmaster of the rural regions. They have provided a school-wagon which is furnished with a room for the teacher, a classroom or study, and a library, all suitably supplied with the necessary material. This wagon will be on the line of the Transcaspian Railway all round the year, remaining as long as may be deemed necessary at districts which are not provided with a school.

— The Imperial University of Tokio, in Japan, is making rapid progress. The number of professors and teachers amounts this year to 138, of whom only 16 are foreigners, the rest being Japanese. The attendance of students has risen to 788. New buildings for technical education, and a new chemical laboratory, have been erected at the cost of nearly \$300,000, and more money is promised by the government for further extensions.

— It is stated that the Electro-Automatic Transit Company, whose railway system was described in *Science* of July 12, has succeeded in running its experimental car at the rate of 120 miles an hour for a distance of ten miles. The experiment was performed at the company's two-mile circular track at Laurel, Md. The company intends to construct a five-mile experimental road in the neighborhood of this city, upon which to test the applicability of their system to passenger service, only light packages and mail matter having been experimented with heretofore.

— The eleventh congress of the Sanitary Institute, which is to meet at Worcester, Eng., from Sept. 24 to 28, will be divided into three sections: viz., Section I. Sanitary Science and Preventive Medicine; Section II. Engineering and Architecture; Section III. Chemistry, Meteorology, and Geology. Each section will begin its work on a separate day. A conference of medical officers of health will be held during the congress; and there will be a health exhibition in the skating-rink and special additional buildings from Sept. 24 to Oct. 19. This exhibition will include sanitary apparatus and appliances, and articles for domestic use and economy.

— "Now, children," said a teacher, after reading the old story of Washington's exploit with his hatchet, "write me all you can remember of that pretty story I have just read to you." The following was the result: Slate I. (Teddy, 8 years old). "George Washington is our father did he tell a lie no he never did he did with a hatchit;" Slate II. (Ethel, 7). "George Washington was the father of is countre hes father sed did you do it he sed i wud not lie i did it with my Hathit and then he busted in tears;" Slate III. (Georgie, 9). "George Washington is the father of our country and he did it with his hatchit and he sed father I did it did the boy deny it o no did he try to put it on some other feller No He did not tell no lie he burst into tears."

— It is generally supposed that oak is much stronger than fir, but a series of tests made recently at the car-shops of the Northern Pacific Railroad, in Tacoma, show that the reverse is actually the case. The tests were made by actual breaking strain, on sticks two by four inches, and four feet long, the weight being applied in

the middle of a span of three feet nine inches. The results of five tests were as follows: first, an old piece of yellow fir, six years exposed to the weather, broke at 3,062 pounds; second, a new soft piece of fine-grain yellow fir broke at 3,062 pounds; third, old piece of yellow fir, coarse grain and hard, broke short at 4,320 pounds; fourth, a new piece of fir from the butt of a tree, coarse grain, broke with a stringy fracture at 3,635 pounds; fifth, a new piece of Michigan oak broke nearly short off at a weight of 2,428 pounds. The deflections before breaking were as follows: the first and second pieces, half an inch; third, three-eighths of an inch; fourth, five-eighths of an inch; fifth, the oak piece, one-inch and an eighth.

— The three teaching universities of Australia — Melbourne, Sydney, and Adelaide — all admit women to their lectures and degrees. It appears that there are now thirty-nine women studying in Melbourne University, twenty-three in Sydney, and thirty-four in Adelaide, the latter figures not including a number of students who are not qualifying for degrees. Adelaide first admitted women students in 1876; Melbourne and Sydney, in 1881 and 1882. Ten ladies have graduated in Melbourne, nine in Sydney, and only two in Adelaide. In all three universities, all prizes, scholarships, and university privileges generally are open to women, who are also eligible as lecturers and professors. In Melbourne they are debarred from membership of the senate, but this seems to be the only barrier of any kind placed in their way.

— In connection with the recent heavy rainfall in the neighborhood of New York, it is interesting to note that at a meeting of the Royal Society of New South Wales, June 5, in the course of some remarks respecting the recent heavy rainfall, Mr. Russell (the government astronomer) stated that he had no hesitation in saying that if rain equal to that which fell in and around Sydney (i.e., 20 to 26 inches) had fallen generally over the catchment areas of Windsor, Richmond, the upper parts of the Hawkesbury, and in the valley of the Hunter, most if not all of the towns on their banks would have been swept away.

— In a recent work by Professor Hartig it is stated, says *Garden and Forest*, that a count of the annual rings of a tree when cut three or four feet from the ground may not give the accurate age of the tree. Where trees are crowded in a forest, and have developed feeble crowns, the greatest annual increment is just below the crown, and it diminishes regularly downwards. When the leaf-area is not sufficient to afford food-material to provide for a sheet of cambium all over the tree, the growth stops before reaching the bottom, and the ring which is found twenty feet up the trunk may fail altogether before it reaches the ground. In such trees there may be rings lacking at three feet high for certain years, and the total number of rings would be less than the number of years in the tree's life.

— The Newfoundland bait act, prohibiting the export of fish-bait from that island, instead of having a prejudicial effect upon the French bank fisheries, as was expected, may have the opposite effect. According to the *Montreal Witness*, the French fishermen have discovered, through necessity, the fact that on the fishing-banks they can catch unlimited quantities of large periwinkles, which, when removed from the shell, and used as bait on their trawls, are a bait which codfish take most ravenously. It thus becomes possible for the fishing-smacks to remain on the banks till their take is complete, hauling up bait on one side of the vessel, and cod on the other, instead of running in to port at intervals, and paying an exorbitant price for bait.

— At a meeting of the London Chemical Society, June 20, as reported in *Nature*, a note on a yellow pigment in butterflies was read by Mr. F. G. Hopkins. The color effects on the wings of lepidopterous insects are for the most part probably due to purely physical causes, but in some cases pigments are undoubtedly present. A yellow pigment, which is found in its purest form in the common English brimstone butterfly, and may also be detected in the wings of a very large number of day-flying *Lepidoptera*, can be obtained from the wings by simple treatment with hot water, in which it is freely soluble, and may be identified by its yielding a

marked murexide re-action, when evaporated with nitric acid, and afterwards treated with ammonia or potash. The common brimstone butterfly yields somewhat less than a milligram of pigment from each insect: larger foreign species, such as those belonging to the species *Callidryas*, may yield as much as four or five milligrams. Examination of the pigment reveals its near relationship to mycomelic acid, a yellow derivative of uric acid; and the author suggests that it may possibly be a condensation product of uric and mycomelic acids.

— The International College, Spring Grove, not far from London, England, which twenty-five years ago was much talked about and seemed to be full of promise, ceases to exist at the end of this month. The college was brought into existence through a suggestion of the late Richard Cobden, made soon after the French treaty of commerce was concluded in 1860. The intention of the promoters, as given in *The Educational Times*, was to found three proprietary colleges, — one in England, one in France, and a third in Germany, — which should follow the same curriculum, so that students could spend part of their time in each of the colleges, the change of residence being effected without any break of continuity in their studies. There was probably involved in the notion a dream that the international intimacies which such a system would necessarily bring about would tend to put an end to wars and rumors of wars. Indeed, we find it suggested in one of the earlier prospectuses of the college, that, "if the boys of these nations were taught each other's languages in these colleges, when they became men the connection would be made still closer; and it was hoped, that, if this principle were extended to other nations, it might in time have the effect of lessening the number of wars." The Continental members of the triangle were never fairly started, but Mr. Cobden and his friends succeeded in establishing the English college.

— It is claimed that in the new Bookwalter process for converting crude metal into malleable iron or steel, the air-blasts are brought into contact with every portion of the metal, thereby securing a uniformity of structure throughout the entire mass, which has not always been secured with other processes. The main portion of the process is thus outlined by its inventor, Mr. J. W. Bookwalter of Springfield, O.: "Having ascertained that the tendency to form local currents or vortices is much greater when the air-blasts enter the metal near the surface than when they enter at a greater depth below the surface, I devised means whereby to secure a continuously uniform action of the air upon limited uniform quantities of the metal at one time, feeding the metal gradually to the air within a fixed or limited space. By this means small portions of the metal as they are fed to the air are driven thereby out of the zone of violent agitation of the air and metal, and thereafter are thrown back toward the greater body of metal while a new portion of the latter is being brought under the influence of the air, that portion of the metal which is submitted to the action of the air being the purest portion of the body, — that is, having combined with it less scoria than any other portion, — and the greater body of the metal which is not under the direct influence of the air being comparatively stationary, and free from currents or vortices."

— In a letter to *Nature* under date of Cambridge, Mass., July 15, Dr. H. A. Hagen writes, "Having studied Sir J. Lubbock's interesting book, I remembered a fact observed by me, which, though it is not conclusive, seems worth mentioning. I was amused some years ago to observe the feeding of the young in a sparrow-house near an upper window of my house. The old sparrow alighted upon the small veranda of the sparrow-house with four living canker-worms in his beak. Then the four young ones put out their heads with the customary noise, and were fed each with a caterpillar. The sparrow went off, and returned after a while again with four living canker-worms in his beak, which were disposed of in the same manner. I was so interested and pleased with the process that I watched it for some time and during the following days. A fact which I have not seen noticed here in the extensive sparrow literature, is that for a number of years sparrows begin to build nests of dry grass and hay at the top of high trees. The first I saw were large irregular balls placed on the tripod of twigs. The

entrance was on the inner side near the lower end of the balls. Last year I observed another form of the nests. A strong rope formed of dry grass, as thick as a man's wrist and as long as the fore-arm, is fastened only with the upper end to strong branches at the top of high trees. The rope's end has a rather large ovoid shape, with the entrance to the inside near the end. Of such nests I saw last winter about a dozen on the elms here in Main Street, near the college grounds, and similar ones in Putnam Avenue and other streets. A long pole near my house strongly covered by a vine (*Celastrus scandens*) had such a nest for three years, used every year. In the sparrow-houses around my lodging the sparrows stay throughout the winter, commonly one male and three females in every house, till in spring the superfluous females are turned out."

— At the thermometric bureau of the Yale College Observatory during the last year the comparison of thermometers has continued to be made by Mr. C. B. Peck. The number received for verification during the year ending June 1, 1889, was 7,475, being 249 in excess of the preceding, the maximum year. It is perhaps well to call public attention to the fact, not new, but continually overlooked, that the most accurate thermometers may be made to give false testimony by misinterpretation of their language. Although every certificate issued from this observatory, for other than clinical thermometers, contains a statement of the only conditions under which the correction therein given can be truthfully applied, they are continually called upon to explain, especially in the case of high-temperature thermometers, that, when only the bulb is immersed in a liquid of high temperature, the indicated temperature is too low by an amount depending upon the number of degrees of the mercury in the cooler stem and the difference between the temperatures of the bulb and stem. They have been called upon to show frequently that this error, which is independent of any correction due to the thermometer, may be as much as eight or nine degrees in the case of high-temperature oils, as their temperatures are generally measured. A simple remedy for this indefiniteness of measurement would seem to be a special form of thermometer in which nearly all the mercury should be immersed. Of the same nature is the correction of possibly 0°.1 to be applied to clinical thermometers of the "Indestructible Index" form, when the detached column of mercury constituting the index is quite long (expressed in degrees), and is read after removal to a much cooler atmosphere; but the probable error on this account does not exceed the probable error of reading.

— Recent reports to the United States Hydrographic Office regarding the seeming failure of certain fog-signals render it desirable to give the conclusions of an expert in this subject. We extract the following from a paper read before the Philosophical Society of Washington, October, 1881, by Mr. Arnold B. Johnson, chief clerk of the Lighthouse Board: "When approaching from windward, the fog-signal is picked up earliest aloft; from leeward, on deck. Do not assume that you are out of hearing distance because you fail to hear the signal, nor that you are at a great distance because the sound is faint, nor that you are near because you hear it plainly. Do not assume that you have or have not reached a given point in your course because you do or do not hear the signal with the same intensity as on some former occasion. Do not assume that the signal has ceased sounding because you fail to hear it even when within easy earshot. Do not assume that the aberrations of audibility are the same in different fog-signals. Do not expect to hear the signals as well as usual when the upper and lower air-currents run in different directions, or when wind and tide do so, or during a time of electric disturbance, or when the sound must reach you from over an island or point of land. When there is a bluff behind the signal, be prepared for irregular intervals in audition, as would follow were the sound to ricochet like a cannon-ball. Thus you might hear it at 2, 4, 6, 8, etc., miles, and lose it at 1, 3, 5, 7, etc., miles, or at any other combination of distances, regular or irregular. Until the laws governing these aberrations are evolved and a method is discovered by which the irregularities can be corrected, you will do well, when you do not get the expected sound of a signal, to assume that you may not hear the warning that is nevertheless faithfully sounded, heave your lead, and use other means to make sure of your position."